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End to End ML Pipeline - Part 3

Rohan Patil

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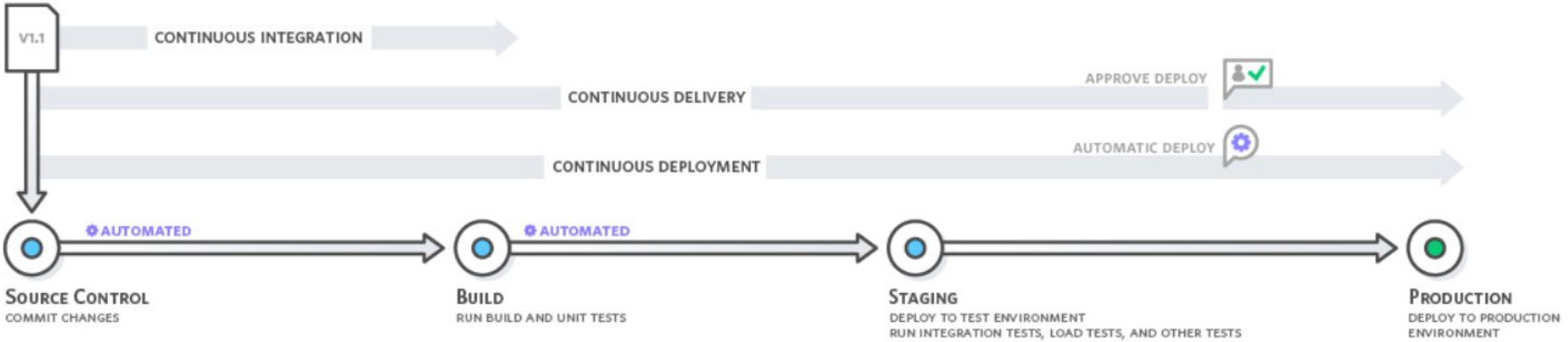
Continuous integration and Continuous deployment

Rohan Patil

Continuous integration and Continuous deployment



https://aws.amazon.com/devops/continuous-integration/

Real-Life Example: Predictive Maintenance

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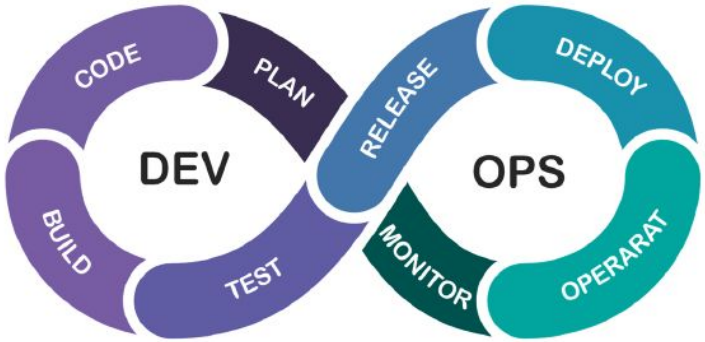
- Step 1: Updating Model Code
- Step 2: Automated Model Training and Tests
- Step 3: Model Deployment to Staging
- Step 4: User Testing and Feedback
- Step 5: Continuous Deployment to Production



Why Do We Need CI/CD?

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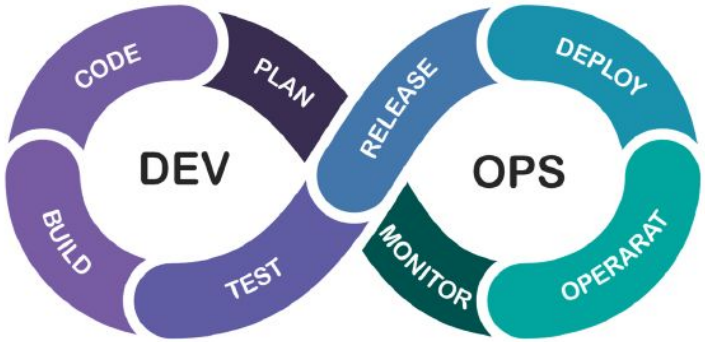
- Speed, Efficiency, Reliability
- Quality Enhancement
- Risk Reduction
- Robust and Reliable Software



CI/CD can be implemented using

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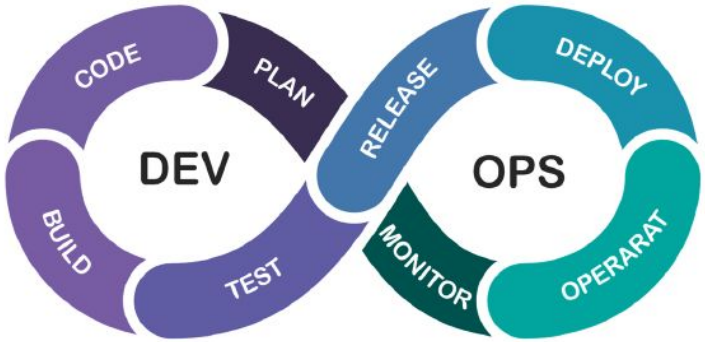
- Jenkins
- GitLab CI/CD
- GitHub Actions
- Azure DevOps
- AWS CodePipeline (CodeBuild, CodeDeploy, and CodeCommit)



CI/CD with AWS Developer Tools

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AWS
CodePipeline

AWS
CodeCommit

AWS
CodeBuild

AWS CodePipeline

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- Continuous delivery service for fast and reliable application updates
- Model and visualize your software release process
- Builds, tests, and deploys your code every time there is a code change

AWS CodeCommit

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- Secure, scalable, and managed Git source control
- Use standard Git tools
- Scalability, availability, and durability of Amazon Simple Storage Service (Amazon S3)
- Encryption at rest with customer specific keys
- No repo size limit

AWS CodeBuild

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- Fully managed build service that compiles source code, runs tests, and produces software packages
- Scales continuously and processes multiple builds concurrently
- Only pay by the minute for the compute resources you use
- Supports various programming languages

Conclusion

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Sagemaker Pipelines

Rohan Patil

Why SageMaker Pipelines?

What is SageMaker Pipelines?

How does it work?

Benefits of SageMaker Pipelines

How SageMaker Pipelines Uses CodePipeline, CodeCommit, and CodeBuild?

Components of Sagemaker Pipelines

Sagemaker Pipeline example

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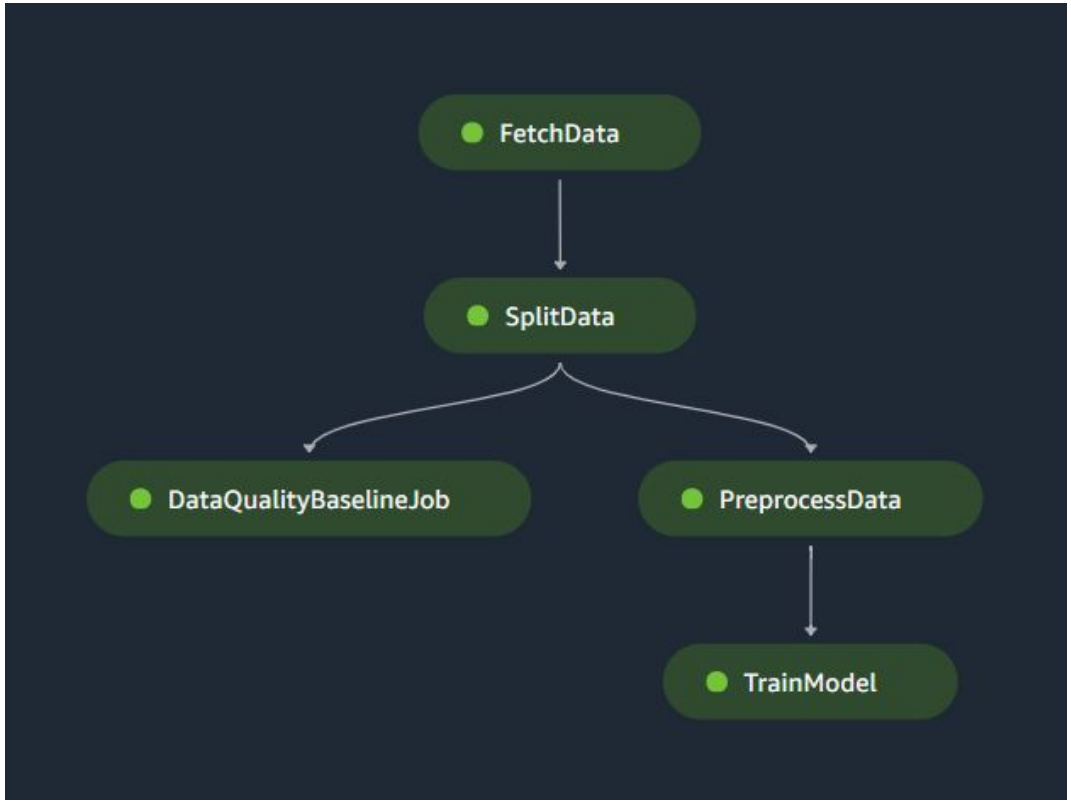

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Generating Streaming Data

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Data Generation Workaround

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- Pipeline for data processing and transformation.
- Using historical data from 1st Jan to 15th Feb.
- Using data from 15th Feb to 28th Feb for streaming.

Data Sending Schedule

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- Traffic and weather forecast data sent weekly.
- Truck schedule data sent daily.
- Drift pipeline triggered weekly.

Machine Learning Predictions

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- Prediction vs. ground truth delay labels.
- Updating labels of historical records.

Necessary Stored Values

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- Daily date tracking.
- Counter for days in a week.
- Boolean variable for first day of the week.

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Notification System for Sagemaker Pipeline

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Conclusion

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